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09/935,582	08/24/2001	Dae-Kyu Choi	SEC.874	3639

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EXAMINER

CROWELL, ANNA M

ART UNIT PAPER NUMBER

1763

DATE MAILED: 12/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.



## Office Action Summary

Application No.

09/935,582

Applicant(s)

CHOI ET AL.

Examiner

Michelle Crowell

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 10-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_



## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Species I, claims 1-9 in Paper received September 9, 2003 is acknowledged.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Luu (U.S. 5,631,611).

Referring to Figures 1, 2, and 4, column 3, line 30-column 4, line 45, and column 6, lines 5-12, Luu discloses an apparatus for matching an impedance of an RF generator to an impedance of an RF load comprising: a variable inductor 35 coupled to a variable capacitor Cx and an invariable capacitor Cp, the variable inductor 35 having two inductors Lp, Ls coupled electrically to each other and disposed adjacent to each other, at least one of the two inductors being movable so that a magnetic flux of the at least one inductor interferes with a magnetic flux of an other one of the two inductors (col. 3, lines 30-38, col. 6, lines 5-9). Additionally, the two inductors include a fixed inductor Ls having a first number of coil turns wherein one end of the fixed inductor being connected with the variable capacitor Cx (col. 3, lines 36-38); and a rotating inductor Lp having a second number of coil turns wherein one end of the rotating inductor being connected with the invariable capacitor Cp (col. 3, lines 31-32, col.4, lines 40-45). Furthermore,



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a transfer element moves the rotating inductor toward and away from the fixed inductor (col. 6, line 5-9).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 2, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luu (U.S. 5,631,611) in view of Whitley (U.S. 4,355,040).

The teachings of Luu have been discussed above.

Luu fails to specifically teach the shape of fixed inductor and rotating inductor being of an oval and spiral shape; however, the shape of the claimed fixed inductor and rotating inductor being of an oval and spiral shape is considered a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular shape of



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the claimed fixed inductor and rotating inductor was significant. Additionally, it is known that circular coils provide a higher inductance value. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention of the shape of the fixed inductor and rotating inductor of Luu be of an oval and spiral shape since this a matter of design choice and circular coils provide a higher inductance value.

Luu fails to specifically show an inductor having several turns and a member which physically connects the two inductors.

Referring to Figure 1 and 7, column 2, lines 3-47, and column 6, lines 19-55, Whitley teaches it is conventionally known in the art for a matching circuit having two inductors with several turns to be connected by a connecting member 16, 216 for adjusting the inductance value. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention for the coils of Luu to be connected use a connecting member as taught by Whitley in order to adjust the inductance value. Furthermore, the connection member having a gripper and a locking member is considered a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the connection member having a gripper and a locking member was significant.

7. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luu (U.S. 5,631,611) in view of Whitley (U.S. 435,040) as applied to claims 1, 2, 6, and 7 above, and further in view of Maillard (U.S. 4,222,022).

The teachings of Luu in view of Whitley have been discussed above.

Luu in view of Whitley fails to teach that the inductors include fixing elements.



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Referring to Figure 1 and column 2, lines 28-40, Maillard teaches a nonconductive fixing element having an E-shape 10, 11, 12 for supporting an inductor 1 having several turns. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the rotating and fixed inductors of Luu in view of Whitley with fixing elements as taught by Maillard in order to support the inductor.

8. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luu (U.S. 5,631,611) in view of Whitley (U.S. 435,040) as applied to claims 1, 2, 6, and 7 above, and further in view of Koontz (U.S. 5,309,120).

The teachings of Luu in view of Whitley have been discussed above.

Luu in view of Whitley fails to teach that the coil is made of Cu or Al and coils formed of conductive pipe having a plurality of conducting wires.

Referring to Figure 3 and column 2, line 43-column 3, line 8, Koontz teaches it is conventionally known in the art for the coil in an inductor to be made of a copper pipe 16 having a plurality of conducting wires 18. Additionally, copper and aluminum are well known conductive materials in the art used in the fabrication of circuits. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the coils of Luu in view of Whitley out of copper piping having plurality of conducting wires since copper is a well known conductive material in the art used in the fabrication of circuits.



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***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bourdon '817 and Mett et al. '896 show match circuits having a variable inductor, variable capacitor and an invariable capacitor. Kluge et al. '086 shows an inductor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (703) 305-1956. The examiner can normally be reached on M-F (8:00 - 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

AMC *amc*

*Gregory Mills*  
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